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ABSTRACT

This study compared end-of-year standardized test scores (CAT) of 204 children in 6 developmentally appropriate and 6 developmentally inappropriate kindergarten classes. Particular attention was given to the effects on test scores of the interaction of classroom type with sex, socioeconomic status, and race. Relationships between children's CAT scores and stress scores in the developmentally appropriate class were compared to the same relationships in the developmentally inappropriate class. In the developmentally appropriate class, children who exhibited higher levels of stress during testing scored significantly lower on the CAT average, and on the reading comprehension and language portions of the CAT, than children who exhibited lower levels of stress. These findings suggest that higher levels of stress during standardized testing may negatively affect performance on the test. No significant differences between classroom type and overall test scores were found. Emphasis on academics in developmentally inappropriate classrooms did not result in higher test scores. This finding and previous research that indicates negative consequences of inappropriate curricula suggest that developmentally inappropriate instructional practices are not only potentially damaging to young children's psychological well-being, but that they are also ineffective in promoting achievement in kindergarten children. Appended are 11 references. (Author/GLR)

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Achievement of Kindergarten Children in Developmentally Appropriate and Developmentally Inappropriate Classrooms

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Abstract

This study compared end of year standardized test scores (CAT) of children (n=204) in 6 developmentally appropriate and 6 developmentally inappropriate kindergarten classrooms, and examined the interactive effects of classroom type with sex, SES, and race on test scores. The more substantive findings indicated no significant differences between classroom type and overall test scores. Relationships between children's CAT scores and stress scores in a developmentally appropriate classroom (n=20) versus a developmentally inappropriate classroom (n=11) during testing were also explored. In the appropriate classroom, children who exhibited higher levels of stress during testing scored significantly lower on the CAT average, the reading comprehension, and the language portions of the CAT than children who exhibited lower levels of stress during testing.

ACHIEVEMENT OF KINDERGARTEN CHILDREN IN DEVELOPMENTALLY APPROPRIATE AND DEVELOPMENTALLY INAPPROPRIATE CLASSROOMS

The recent trend toward highly academic instruction with young children has lead researchers to investigate the effects of developmentally appropriate and inappropriate practices as defined by the National Association for the Education of Young Children [NAEYC (Bredekamp, 1987)]. Potential harmful effects of inappropriate practice (i.e., more negative attitudes toward school, Hyson, van Trieste, & Rauch 1989; less creativity, Hyson et al., 1989; more observed stress behaviors, Burts, Hart, Charlesworth, Fleege, Mosley, & Thomasson, in press; Burts, Hart, Charlesworth, & Kirk, 1990) have been documented.

In addition, much has been written concerning the inappropriateness and possible harmful effects of standardized testing with young children. Recent research has indicated that increased stress related behaviors occur during testing and that standardized tests are an invalid assessment of children's capabilities (e.g., Fleege, Charlesworth, Burts, & Hart, 1991). However, many school districts are still requiring documentation concerning children's achievement as measured by performance on standardized tests before changes to more appropriate curricula are made.

This study compared end of year standardized test scores (CAT) of children in developmentally appropriate and inappropriate kindergarten classrooms and examined the interactive effects of classroom type, sex, SES, and race with test scores. In addition, relationships between CAT scores and stress scores during testing were explored.

Method

Subjects were 204 kindergarten children (99 males, 105 females; 80 blacks, 124 whites) in twelve classrooms (6 appropriate; 6 inappropriate). Appropriateness of the classrooms was determined by scores on the Teacher Questionnaire (Charlesworth, Hart, Burts, & Hernandez, in press) and verified using the Checklist for Rating Developmentally Appropriate Practice in Kindergarten Classrooms (Charlesworth et al., in press). A median split on Hollingshead scores created high (n=55 appropriate, 47 inappropriate) and low (n=48 appropriate, 54 inappropriate) SES scores. Observations of children's stress behavior during testing were gathered in a subsample of one appropriate (n=20) and one inappropriate (n=11) classroom. Measures of children's stress behavior were obtained using the Classroom Child Stress Behavior Instrument (Burts et al., 1990). Following school policy, the Brigance was given at the beginning of the school year, and the California Achievement Test was given at the end of the year.

Main and interactive effects of classroom type, sex, SES, and race on CAT scores were examined with a three-way multivariate analysis of covariance (MANCOVA), where the CAT subtest scores served as variates and Brigance scores from the beginning of the year served as covariates. A separate analysis of covariance (ANCOVA) was conducted on average CAT scores since this measure represented a linear combination of all CAT subtest scores. In the analyses, CAT scores were the criterion variables and classroom type,

sex, SES, and race, and all interactions among the four were the predictors. All analyses were conducted with the SPSSX MANOVA procedure with unique sums of squares. The unique sums of squares automatically controlled the effects of classroom type for sex, SES, and race. Pearson correlations were conducted between stress scores and CAT scores within each classroom type of the subsample.

Results

Results of Average CAT Scores

The more substantive findings indicated no significant difference between classroom type and overall CAT scores. However, a significant univariate main effect of SES was obtained from the ANCOVA for average CAT scores $F(1.187) = 4.14$, $p < .05$. Mean scores indicated that high SES children scored significantly higher than low SES children on this measure (Ms = 508.54 and 478.57; sd = 49.61 and 59.85, respectively).

The ANCOVA also produced a significant interaction effect for classroom type, sex, and race $F(1,187) = 4.45$, $p < .05$. Significant findings from simple effects analysis revealed that white males in inappropriate classrooms scored higher than black males in inappropriate classrooms (Ms = 528.94 and 460.83; sd = 53.92 and 75.45, respectively).

Results for CAT Subtest Scores

A significant multivariate main effect (using Wilk's lambda as the criterion) emerged in analysis on CAT subtest scores for SES $F(4,184) = 1.52$, $p < .05$. Subsequent univariate analyses performed on CAT subtest scores revealed significant effects for SES on reading vocabulary, language, and math scores F's(1,187) = 4.42, 4.53, 4.21, $p < .05$. High SES children scored higher than low SES children on reading vocabulary (Ms = 523.54 and 486.53 ; sd = 72.65 and 81.82, respectively), language (Ms = 525.72 and 487.94; sd = 71.89 and 92.89, respectively), and math (Ms = 503.27 and 473.05; sd = 50.44 and 56.67, respectively).

A marginally significant multivariate interactive effect also emerged for classroom type by sex by race $F(4, 184) = 1.79$, $p < .10$. Subsequent univariate analysis indicated that black males in inappropriate classrooms scored lower than white males in inappropriate classrooms on reading vocabulary (Ms = 473.23 and 540.51; sd = 109.88 and 64.20, respectively), reading comprehension (Ms = 448.43 and 505.99; sd = 68.85 and 55.84, respectively), language (Ms = 461.36 and 555.94; sd = 121.45 and 80.63, respectively), and math (Ms = 454.65 and 499.45; sd = 66.85 and 50.05, respectively). White females in appropriate classrooms scored higher than black females in appropriate classrooms on reading vocabulary (Ms = 491.92 and 534.87; sd = 65.68 and 63.81, respectively). However, black females in inappropriate classrooms scored higher than white females in inappropriate classrooms on the reading vocabulary subtest (Ms = 512.59 and 470.92; sd = 67.21 and 76.42, respectively).

Results for Stress Levels

Significant correlations were found between stress scores during testing and CAT scores ($p < .01$). In the appropriate classroom, children who exhibited higher levels of stress during testing scored significantly lower on the CAT average ($r = -.63$), the reading comprehension ($r = -.61$), and the language portion ($r = -.56$) of the CAT than children in the appropriate classroom who exhibited lower levels of stress. No significant relations were found between stress levels during testing and CAT scores for children in the developmentally inappropriate classroom.

Conclusions and Discussion

Administering paper and pencil standardized tests to groups of young children is part of the current trend toward the increased academic emphasis in early childhood programs. The use of these tests with young children has been subject to recent criticism (e.g., Bredekamp & Shepard, 1989; Fleege et al., 1991; Meisels, 1989; NAEYC, 1988). Previous research has indicated that standardized testing is stressful and invalid for young children (e.g., Fleege et al., 1991). Findings from this study suggest that higher levels of stress during standardized testing may negatively affect performance on the test.

Despite the questions raised concerning standardized testing, school systems continue to rely upon standardized tests to document achievement. Before considering changing to programs with a less formal academic emphasis, documentation that more developmentally appropriate programs will not result in lower achievement is required. This study found that children in developmentally appropriate classrooms scored about the same on a standardized test as children in developmentally inappropriate classrooms. As with previous research (e.g., Entwisle & Alexander, 1990; Scott, 1989), low SES and black children generally scored lower than high SES and white children . Emphasis on academics in inappropriate classrooms did not result in higher test scores. This finding, along with previous research indicating negative consequences of inappropriate curricula (e.g., Burts et al., in press; Burts et al., 1990; Hyson et al., 1989), would seem to suggest that inappropriate instructional practices are not only potentially damaging to young children's psychological well being, but that they are also ineffective in promoting achievement in kindergarten children.

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